

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE & MANAGEMENT

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CONTENTS

Sr. No.	TITLE & NAME OF THE AUTHOR (S)	Page No.
1.	ECONOMIC ANALYSIS OF SAFFRON PRODUCTION IN IRAN <i>DR. MASSOUD KHEIRANDISH, M. V. SRINIVASA GOWDA & DR. SAJAD ABDULLAH SARAF</i>	1
2.	WHY CONSISTENCY OF ACCOUNTING STANDARDS MATTERS: A CONTRIBUTION TO THE PRINCIPLES –VERSUS - RULES DEBATE IN FINANCIAL REPORTING <i>DR. FISSEHA GIRMAY TESSEMA</i>	5
3.	EVALUATING THE FINANCIAL SOUNDNESS OF SELECTED COMMERCIAL BANKS IN SRI LANKA: AN APPLICATION OF BANKOMETER MODEL <i>NIMALATHASAN, B., BALAPUTHIRAN, S & PRIYA, K</i>	12
4.	A STUDY ON FDI IN SULTANATE OF OMAN <i>DR. R. DHANUSKODI</i>	15
5.	BOARD SIZE, CHIEF COMPLIANCE OFFICER AND FINANCIAL PERFORMANCE OF BANKS IN NIGERIA <i>AHMAD BAWA ABDUL-QADIR & MANSUR LUBABAH KWANBO</i>	19
6.	A STUDY ON EMPLOYEE JOB SATISFACTION IN CONSTRUCTION COMPANIES IN VIETNAM <i>NGUYEN PHI TAN</i>	23
7.	FACTORS INFLUENCE FINANCIAL DECISIONS UNDER THE PYRAMID OF NATURAL CONSTRAINTS <i>MEHTAB ARSHAD BUTT & ROZEENA SADDAR</i>	28
8.	A STUDY ON UNPRINCIPLED SELLING PRACTICES TOWARDS THE PHARMACEUTICAL INDUSTRY IN INDIA <i>DHANUNJAY GONUGUNTLA, M. MURUGAN & DR. K. P. V. RAMANA KUMAR</i>	31
9.	JOB STRESS & EMPLOYEE BURNOUT: AN OVERVIEW <i>DEEPIKA SHARMA & DR. M. L. GUPTA</i>	35
10.	THE CONSUMER BEHAVIOR TOWARDS PACKAGE OF COSMETICS <i>HEMAPATIL & DR. B BAKKAPA</i>	38
11.	NPA MANAGEMENT IN PUBLIC SECTOR BANKS: A STUDY OF CANARA BANK AND STATE BANK OF INDIA <i>K. V. RAMESH & A. SUDHAKAR</i>	42
12.	A STUDY ON CONSUMERS PERCEPTION TOWARDS GREEN PACKAGING INITIATIVES WITH REFERENCE TO CONSUMERS IN PUDUKKOTTAI DISTRICT <i>DR. S. SOLAIAPPAN & S. PALANIAPPAN</i>	50
13.	THE EMPIRICAL EVIDENCES OF SLOWDOWN OF FDI INFLOW IN INDIA SINCE 2009 <i>PEARLY JERRY</i>	55
14.	CORPORATE REPORTING - ITS IMPACT ON INDIVIDUAL INVESTORS <i>DR. P. SAIRANI & ANNIE KAVITA</i>	62
15.	KNOWLEDGE MANAGEMENT STRATEGY AND ACTION PLAN FOR SUCCESSFUL IMPLEMENTATION <i>C. RAMANIGOPAL</i>	67
16.	HUMAN RESOURCE ACCOUNTING IN INDIA – QUANTIFICATION OF QUALITATIVE FACTORS OF EMPLOYEES <i>DR. A. CHANDRA MOHAN, S C RAJAN DANIEL & DR. N. KISHOREBABU</i>	70
17.	THE IMPACT OF ADVERTISING APPEALS ON CUSTOMER BUYING BEHAVIOR <i>GUNJAN BAHETI, DR. RAJENDRA KUMAR JAIN & NIDHI JAIN</i>	75
18.	ASSESSMENT OF LIQUIDITY IN INDIAN PHARMACEUTICAL INDUSTRY – A STUDY <i>K. PADMINI & C. SIVARAMI REDDY</i>	79
19.	LIQUIDITY MANAGEMENT: AN EMPIRICAL STUDY OF CUDDAPAH SPINNING MILLS LIMITED, KADAPA (AP) <i>N.VENKATA RAMANA</i>	83
20.	INTRAPRENEURSHIP AND ORGANIZATIONAL KNOWLEDGE IN THE CORPORATE ENVIRONMENT: A THEORETICAL FRAMEWORK <i>DR. LEENA JAMES</i>	89
21.	SUGAR INDUSTRY IN INDIA – AN OVERVIEW <i>V. RAMESH BABU & DR. M. MADHUSUDHANA VARMA</i>	93
22.	PEPPER PRODUCTION TREND IN INDIA: AN OVERVIEW <i>DR. P. CHENNAKRISHNAN</i>	101
23.	FINANCING STRATEGIES FOR SMES IN INDIA – A WAY OUT <i>AMITESH KAPOOR</i>	104
24.	BRAND LOYALTY- A MEASURE <i>DR. Y. JAHANGIR</i>	112
25.	ANALYSIS OF LIQUIDITY, PROFITABILITY AND WORKING CAPITAL MANAGEMENT - AN EMPIRICAL STUDY ON BSE LISTED COMPANIES <i>HUMA KHAN</i>	116
26.	COMPLAINTS MANAGEMENT IN BANKS: AN AID TO CUSTOMER SATISFACTION <i>DR. HARPREET KAUR KOHLI</i>	120
27.	PERFORMANCE MANAGEMENT: A HOLISTIC REQUIREMENT FOR ORGANIZATIONS <i>DR. RAJNI SINGH</i>	124
28.	WORK EFFICIENCY ACQUISITION: AN IMPERATIVE NEED FOR HUMAN RESOURCE PROFESSIONAL <i>DR. L. N. ARYA & SATYAM PINCHA</i>	128
29.	RETENTION AND SATISFACTION OF CONSUMERS: A STUDY OF UNIVERSITY OF JAMMU <i>ANJU THAPA</i>	132
30.	CUSTOMER SATISFACTION TOWARDS VARIOUS FACILITIES PROVIDED BY PUBLIC BANKS (A COMPARATIVE STUDY OF PNB AND SBP IN JIND DISTRICT, HARYANA) <i>ANJU BALA</i>	136
	REQUEST FOR FEEDBACK	142

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SUGAR INDUSTRY IN INDIA – AN OVERVIEW

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ABSTRACT

India was the world's largest producer of sugar cane occupies a very pride place in the world. In India, the cultivation of sugar cane is 10,000 miles tones. Sugar cane is one of the important crops for the Indian farmer. The area under sugar cane varies from 1,176 hectares in 1930-31 to 5,151 in 2007-08. The yield of cane per hectare varies from 39 tonnes in 1930-31 to 71.1 tonnes in 1998-99. The number of factories ranges between 29 in 1930-31 to 527 in 2010-11 and shows an ever increasing trend. The average duration days ranges between 87 in 2008-09 and 181 in 1995-96. But it shows up and down trend in the study period. The capacity ranges between 644 in 1935-36 to 527 in 2010-11 and shows an ever increasing trend. Cane Crushed varies from 1,339 tonnes in 1930-31 to 279,295 in 2006-07 and shows lot of variations in the crushed crane. The total sugar production varies from 120 in 1930-31 to 98,338 in 1993-94 and shows lot of variation in the sugar production. The Molasses Production varies from 336 in 1931-32 to 131,111 in 2006-07. Recovery Performance varies from 8.96 in 1930-31 to 10.55 in 2007-08 and shows variations. The molasses in percentage to cane varies from 3.33 in 1935-40 to 4.69 in 2006-07 with lot of variations. The results show that the sugar industry is growing in area, number and duration but showing ups and downs.

KEYWORDS

Molasses production, State- wise yield of sugar cane, consumption of sugar.

1. INTRODUCTION

India was the world's largest producer of sugar cane occupies a very pride place in the world. The world production of sugar is 167 million tonnes (World Sugar News, 2010). The world sugar production is highly dependent on weather and the global demand and supply balance which dictates free market pricing (Muthaiya, 2011). In India, the cultivation of sugar cane is 10,000 miles tones. The average yield, being 56 tonnes per acre of total cultivating land is occupied by sugar cane cultivation. Sugarcane is grown in almost all part of India, except in colder regions and extreme North Jammu Kashmir, Himachal Pradesh. Sugar cane is one of the important crops for the Indian farmer. Sugar and Jiggery are the main products that we get from Sugarcane. Other products such as Biogases for industrial use, Molasses for distillery, filter cake, Mud as an organic manure and green leaves with tops for cattle feed are also available as by products because of its multi uses Sugarcane has played crucial role in Indian economy with Rs.20000 cores turnover and width 450 mills providing assistance to 45 million sugar cane farmers and 2 million Sugarcane farmers and 2 million workmen directly and indirectly.

In A.P. sugar industry is an important Agro-based industry, occupying the second position next to text tile industry. The annual cultivated area is about 1.99 lack hectares with a yield of 149.45 lacks of tones during 96-97. At present, there are 36 sugar factories in the state and 50% of them are in co-operative sector. The co-operative sugar units in the states have been suffering due to lack of adequate cane irrigation facilities, working capital, by-product utilization, excessive employment etc. The sugar industries which provide direct employment to about 3 lacks persons of sugar cane followed by Brazil & Cuba. Sugar cane existed in India from 3000 B.C. The centre place of origin of sugar cane regarded as Northeastern Indian, from sugar cane seems to have been to China and other places by early travelers and no man's between 1800 and 1700 B.C. later. It was penetrated to Philippines, Jawa and other places. Actually the word sugar derived from a Sanskrit word "shakra".

Sugar cane cultivated by the growers or promising varieties in terms of sugar content and yield. Cultivation techniques maturity of (decided by the cane personnel) harvested and supplied to the factory in trucks fresh less tops and roots. Trucks are weighed with cane on Weigh Bridge and unloaded on the moving cane carrier. Mechanical un-loaders do unloading. Again empty truck is weighed to assertion in the weight of cane unloaded. Sugar industry is one of the best contributors of revenue both to the Central as well as the State Governments. The sugar industry provides direct employment to about 3.35 lack workers, besides providing indirect subsistence to about 35 million sugarcane growers all over the country. Moreover, the industry covers 67,000 villages in which sugarcane is being cultivated in India.

2. SUGAR INDUSTRY IN INDIA

Sugar Industry is the most important industry in Uttar Pradesh as elsewhere in the country (Nawab Ali Khan and Qamrul Islam, 2010). The profile of sugar industry including area, production, yield, number of factories, average duration days, capacity, crude cane crushed, total sugar production, Molasses Production, Recovery Performance, Molasses in percentage to cane etc is shown in table 1.

2.1 AREA

The first pan-Indian satellite mapping of sugarcane has revealed that the estimated area under the crop has gone by 5 per cent to 51.82 lakh hectare (Financial Express, 2011). The area under sugar cane varies from 1.176 hectares in 1930-31 to 5,151 in 2007-08 and shows an increasing trend with minor ups and downs in certain years. The production varies from 36,354 tonnes in 1930-31 to 355,520 tonnes in 2006-07 shows an increasing trend with minor ups and downs in certain years. The LGR of area under sugar cane is 1.82 but does not show substantial increase in the area. The expected increase in area under sugarcane in 2011-12 will be 4803.8 tonnes and in 2012-13 will be 4862.4 tonnes. There would not be much variation in increase in area under sugarcane between 2011-12 and 2012-13. Hence immediate immense measures are to be taken for bringing more area under sugar cane crop.

2.2 YIELD

The yield of cane per hectare varies from 39 tonnes in 1930-31 to 71.1 tonnes in 1998-99 shows an increasing trend with minor ups and downs in certain years. The LGR of yield of sugar cane is 2.87 but does not show substantial increase in the area. The expected increase in number area under sugarcane in 2011-12 will be **338330.1** tonnes and in 2012-13 will be **343796.2** tonnes. There would not be much variation in increase in the yield of sugarcane between 2011-12 and 2012-13. Hence immediate immense measures are to be taken for getting more yield of sugar cane.

2.3 NUMBER OF FACTORIES

The number of factories ranges between 29 in 1930-31 to 503 on 31st December 2011 and 527 in 2012 (ISMA, 2012) and shows an ever increasing trend. The LGR of number of factories is **2.32** but does not show substantial increase in the number of factories. The expected increase in number of factories in 2011-12 will be **523.9** and in 2012-13 will be **531.4**. There would not be much variation in increase in the number of factories between 2011-12 and 2012-13. Hence immediate immense measures are to be taken for number of factories.

2.4 DURATION DAYS

The average duration days ranges between 87 in 2008-09 and 181 in 1995-96. But it shows up and down trend in the study period. The LGR of duration days of sugar cane is **0.06** but does not show substantial increase in the duration days. The expected increase in number of duration days in 2011-12 will be 135.2 days and in 2012-13 will be 135.3 days. There would not be much variation in increase in the duration days between 2011-12 and 2012-13. Hence immediate immense measures are to be taken for increasing in duration days of sugar cane.

2.5 CAPACITY

The capacity ranges between 644 in 1935-36 to 527 in 2010-11 and shows an ever increasing trend. The LGR of capacity of sugar cane is 2.80 but does not show substantial increase in the capacity. The expected increase in capacity in 2011-12 will be **3668.2** tonnes per day and in 2012-13 will be **3727.1** tonnes/day. There would not be much variation in increase in the capacity of sugarcane between 2011-12 and 2012-13. Hence immediate immense measures are to be taken for increasing capacity of sugar cane.

2.6 CANE CRUSHED

Cane Crushed varies from 1,339 tonnes in 1930-31 to 279,295 in 2006-07 and shows lot of variations in the crushed cane. The LGR of Cane Crushed is 2.87 but does not show substantial increase in the Cane Crushed. The expected increase in Cane Crushed in 2011-12 will be **338330.1** tonnes and in 2012-13 will be **343796.2** tonnes. There would not be much variation in increase in the Cane Crushed between 2011-12 and 2012-13. Hence immediate immense measures are to be taken for getting more cane for crushing.

2.7 TOTAL SUGAR PRODUCTION

The total sugar production varies from 120 in 1930-31 to 98,338 in 1993-94 and shows lot of variation in the sugar production. The LGR of Total sugar production is 2.87 but does not show substantial increase in the total sugar production. The expected increase in total sugar production in 2011-12 will be **338330.1** tonnes and in 2012-13 will be **343796.2** tonnes. There would not be much variation in increase in the total sugar production 2011-12 and 2012-13. Hence immediate immense measures are to be taken for getting total sugar production.

2.8 MOLASSES PRODUCTION

The molasses production varies from 336 in 1931-32 to 131,111 in 2006-07. The LGR of yield of molasses production is 6.48 but does not show substantial increase in the molasses production. The expected increase in molasses production in 2011-12 will be **17193.6** tonnes and in 2012-13 will be **17603.7** tonnes. There would not be much variation in increase in the molasses production between 2011-12 and 2012-13. Hence immediate immense measures are to be taken for getting more molasses production.

2.9 RECOVERY PERFORMANCE

Recovery performance varies from 8.96 in 1930-31 to 10.55 in 2007-08 and shows variations. The LGR of recovery performance of sugar cane is **0.12** but does not show substantial increase in the area. The expected increase in recovery performance in 2011-12 and in 2012-13 will be 10.3 per cent. There is no variation in increase in the recovery performance of sugarcane between 2011-12 and 2012-13. Hence immediate immense measures are to be taken for getting more recovery performance of sugar cane.

2.10 MOLASSES IN PERCENTAGE TO CANE

The molasses in percentage to cane varies from 3.33 in 1935-40 to 4.69 in 2006-07 with lot of variations. The LGR of molasses in percentage to cane is 0.38 but does not show substantial increase in the molasses in percentage to cane. The expected increase in molasses in percentage to cane in 2011-12 and in 2012-13 will be 4.7 per cent. There is no variation in increase in the molasses in percentage to cane between 2011-12 and 2012-13. Hence immediate immense measures are to be taken for getting molasses in percentage to cane.

Karl Pearson's coefficient of correlation between Area and Yield of sugar cane is very low as the $r = 0.037$ is very low. It is concluded that there is mismatch between area and yield of sugarcane.

3. STATE-WISE AREA UNDER SUGARCANE

The state-wise area under sugarcane for chief sugar cane production has been presented in Table 2.

TABLE 1: SUGARCANE, SUGAR AND MOLASSES PRODUCTION AT A GLANCE STATEMENT SHOWING AREA, PRODUCTION AND YIELD OF SUGARCANE, FACTORIES IN OPERATION, DURATION, CAPACITY, CANE CUSHED, SUGAR AND MOLASSES PRODUCTION & THEIR RECOVERY % CANE

Years	Area under sugarcane ('000 hectare)	Area under sugarcane ('000 tonnes)	Yield of cane per hectare (tonnes)	No. of Factories in Operation	Average duration days	Average capacity (tonnes per day)	Total Cane crushed ('000 tonnes)	Total sugar product ('000 tonnes)	Recovery of Sugar (%cane)	Molasses Production ('000 tonnes)	Molasses (%cane)
1930-31	1,176	36,354	30.9	29	-	-	1,339	120	8.96	-	-
1935-36	1,681	62,185	37.0	135	126	644	10,045	934	9.29	336	3.33
1940-41	1,617	51,978	321.0	148	113	750	11,492	1,113	9.7	431	3.76
1945-46	1,299	47,273	36.4	145	93	768	9,510	959	10.09	333	3.61
1950-51	1,707	54,823	32.1	139	101	882	11,348	1,100	9.99	387	3.60
1955-56	1,84.7	58,384	31.6	143	145	980	18,642	1,834	9.83	736	3.94
1960-61	2,415	110,001	45.5	174	166	1,172	31,021	3,021	9.74	1,210	3.99
1965-66	2,836	123,990	43.7	200	159	1,253	36,512	3,341	9.7	1,530	4.17
1966-67	2,301	92,826	40.3	200	96	1,229	21,637	2,151	9.94	838	3.89
1967-68	2,046	95,500	46.7	200	97	1,273	22,638	2,248	9.92	861	3.91
1968-69	2,532	124,682	49.2	205	152	1,320	37,699	3,559	9.44	1,671	3.81
1969-70	2,749	135,024	49.2	215	174	1,333	45,701	4,262	9.33	2,004	4.46
1970-71	2,615	126,368	48.3	215	174	1,394	38,205	3,740	9.79	1,611	4.22
1971-72	2,390	113,579	47.5	220	107	1,437	31,015	3,113	10.04	1,228	3.96
1972-73	2,452	124,866	50.9	228	133	1,454	40,407	3,873	9.57	1,694	4.19
1973-74	2,752	140,805	50.9	228	133	1,491	42,278	3,948	9.34	1,831	4.28
1974-75	2,894	144,289	49.9	246	140	1,534	48,343	4,797	9.9	2,012	4.15
1975-76	2,762	140,604	50.9	252	116	1,563	41,880	4,262	10.8	1,703	4.07
1976-77	2,866	153,007	53.4	270	125	1,578	48,819	4,840	9.91	2,059	4.22
1977-78	3,151	176,966	56.2	287	165	1,551	67,329	6,461	9.59	2,971	4.41
1978-79	3,088	151,655	49.1	299	140	1,556	59,717	5,841	9.78	3	4.25
1979-80	2,610	128,833	49.4	300	59	1,651	39,050	3,858	9.88	1,582	4.05
1980-81	2,667	154,248	57.8	315	104	1,718	51,584	5,150	9.98	2,126	4.12
1981-82	3,193	186,358	58.4	320	173	1,721	87,342	8,437	9.66	3,837	4.39
1982-83	3,358	189,505	56.4	321	158	1,779	82,697	8,229	9.95	9.95	3.57
1983-84	3,110	174,076	56.0	326	111	1,779	82,697	8,229	9.95	3,507	4.24
1984-85	2,953	170,319	57.7	339	106	1,824	60,090	6,144	10.22	2,463	4.1
1985-86	2,850	170,648	59.9	342	116	1,885	68,566	7,016	10.23	2,857	4.17
1986-87	3,079	186,090	60.4	354	141	1,862	85,202	8,502	9.98	3,663	4.3
1987-88	3,279	196,737	60.0	357	152	1,888	93,933	9,110	9.7	4,205	4.48
1988-89	3,329	203,037	61.0	365	133	1,925	85,647	8,752	10.22	3,595	4.2
1989-90	3,439	225,569	65.6	377	158	2,036	111,158	10,990	9.89	4,881	4.39
1990-91	3,686	241,045	65.4	385	166	2,088	122,338	12,047	9.584	5,454	4.45
1991-92	3,844	263,995	66.1	392	172	2,167	133,950	13,405	10.01	6,056	4.52
1992-93	3,572	228,003	63.8	393	123	2,325	103,008	10,609	10.3	4,381	4.25
1993-94	3,422	229,660	67.1	394	114	2,388	98,338	98,338	10	4,227	4.3
1994-95	3,867	275,540	71.3	408	159	2,483	147,643	14,643	9.92	6,497	4.4
1995-96	4,147	281,100	67.8	416	181	2,531	174,726	16,453	9.42	8,297	4.75
1996-97	4,174	277,560	66.5	412	130	2,656	130,379	12,905	9.9	5,936	4.55
1997-98	3,930	279,541	71.1	400	123	2,863	129,135	12,852	9.95	5,547	4.37
1998-99	4,055	288,722	71.2	427	141	2,855	157,561	15,539	9.86	6,978	4.37
1999-2000	4,220	299,324	70.9	423	151	3,049	178,494	18,200	10.2	8,013	4.49
2000-01	4,316	295,956	68.6	436	138	3,203	176,660	18,511	10.48	7,820	4.43
2001-02	4,411	297,208	67.4	434	138	3,285	180,346	18,528	10.27	8,073	4.48
2002-03	4,520	287,383	63.6	453	140	3,343	194,365	20,145	10.36	8,879	4.57
2003-04	3,938	233,862	59.4	422	99	3,493	132,511	13,546	10.22	5,905	4.42
2004-05	3,622	237,088	64.8	400	97	3,508	124,772	12,690	10.17	5,513	4.42
2005-06	4,201	281,172	66.9	455	125	3,619	188,672	19,267	10.21	8,549	4.53
2006-07	5,151	355,520	69.0	504	173	3,561	279,295	28,367	10.16	131,111	4.69
2007-08	5,055	348,188	68.9	516	149	3,586	249,905	26,357	10.55	11,313	4.53
2008-09	4,415	285,029	64.6	489	87	3,751	144,983	14,539	10.03	6,546	4.51
2009-10	4,175	292,302	70.0	490	109	3,846	185,548	18,912	10.19	8,400	4.53
2010-11*	4,944	339,168	68.6	527	135	3,744	239,807	24,394	10.17	10,970	4.57
LGR	1.82	2.87	0.23	2.32	0.06	2.80	3.84	4.38	0.12	6.48	0.38
2011-12	4803.8	338330.1	65.7	523.9	135.2	3668.2	196686.9	24318.6	10.3	17193.6	4.7
2012-13	4862.4	343796.2	65.8	531.4	135.3	3727.1	200393.8	24806.9	10.3	17603.7	4.7
Karl pearson's coefficient of correlation between Area and Yield of sugar cane is $r = 0.037$ NS $p\text{-value} = 0.793$											
June 012;Vol.43.10											

TABLE 2: STATE - WISE AREA UNDER SUGARCANE IN INDIA

Sl. No.	State	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-2011	2011-12	LGR	2012-13
1	Andhra Pradesh	233	209	210	230	264	247	196	158	192	204	-2.1	189.0
2	Assam	26	25	24	23	27	26	28	27	30	25	1.3	27.9
3	Bihar	107	104	104	101	130	109	112	116	248	235	9.9	211.0
4	Chhattisgath	4	5	6	6	7	11	10	12	8	8	8.1	11.1
5	Gujarat	203	176	197	197	214	211	221	154	190	194	-0.4	191.4
6	Hayrana	189	160	130	127	140	140	90	74	85	95	-8.7	64.3
7	Jharkhand	4	4	4		4	6	5	7	7	7	7.9	7.5
8	Karnataka	383	243	178	219	326	305	281	337	423	430	5.1	400.6
9	Kerala	4	3	3	7	5	2	2	3	3	2	-6.4	2.2
10	Madhya Pradesh	39	43	52	56	64	75	71	62	65	81	6.4	82.1
11	Maharashtra	573	443	324	501	1049	1093	68	756	965	1022	7.7	966.1
12	Orissa	14	15	15	16	20	20	11	8	13	14	-2.7	12.5
13	Punjab	154	123	86	84	99	110	81	60	70	80	-7.5	55.9
14	Rajasthan	10	6	6	8	11	10	7	6	5	16	3.1	9.9
15	Tamil Nadu	261	192	232	336	391	354	309	293	316	382	4.2	378.1
16	Uttar Pradesh	2149	2030	1955	2156	2247	2179	2084	1977	2125	2162	0.2	2126.7
17	Uttarakhand	134	128	107	101	121	124	107	93	107	108	-2.3	98.7
18	West Bengal	20	17	16	15	17	17	18	14	15	16	-1.9	14.8
19	Others	13	12	13	14	15	15	14	15	18	18	4.0	17.9
	All India	4520	3938	3662	4201	5151	5055	4415	4175	4885	5099	2.0	5008.5

* Provisional. Third Advance Estimates

The table shows that Uttar Pradesh, Maharashtra, Andhra Pradesh, Tamil Nadu and Karnataka are the most populous states having large area under sugar. But the sugar cultivation in all the leading states shows steep ups and downs and these may be due to vagaries of monsoons, farmers' despair on the low selling cost of both sugarcane and jaggery and involvement of excessive expenditure.

The state-wise production of sugarcane for chief sugar cane production has been presented in Table 3.

TABLE 3: STATE - WISE PRODUCTION OF SUGARCANE IN INDIA

Sl.NO	State	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-2011	2011-12	LGR	2012-13
1	Andhra Pradesh	15387	15070	15739	17656	21692	20296	15380	11708	14964	15912	-0.9	15567.2
2	Assam	916	981	884	871	1055	980	1100	1059	1075	984	1.7	1082.4
3	Bihar	4521	4286	4112	4338	5956	385	4960	5033	12764	11839	13.1	10023.0
4	Chhattisgarh	10	13	15	16	19	28	25	29	22	19	7.7	27.9
5	Gujarat	14071	12669	14570	14580	15630	15190	15510	12400	13760	13390	-0.3	13943.9
6	Haryana	10650	9280	8060	8180	9580	8860	5130	5335	6042	6745	-6.3	5076.0
7	Jharkhand	141	136	142	142	142	150	349	447	457	457	17.1	497.8
8	Karnataka	32485	16015	14276	18267	28670	26240	23328	30443	39657	38808	7.1	37351.9
9	Kerala	313	291	283	916	440	218	276	285	271	156	-6.5	222.1
10	Madhya Pradesh	15663	1874	2148	2425	2806	3180	2975	2535	2667	3098	-15.9	484.6
11	Maharashtra	42167	25668	20475	38853	78568	88437	60648	64159	81896	82473	10.9	93335.2
12	Orissa	753	858	560	1073	1274	1096	646	490	903	797	-0.8	808.4
13	Punjab	9290	6620	5170	4860	6020	6690	4670	3700	4170	4800	-7.0	3438.7
14	Rajasthan	422	309	277	483	630	594	388	344	368	998	7.1	668.3
15	Tamil Nadu	24165	17656	23396	35107	41124	38071	32804	29746	34252	39367	5.3	40728.1
16	Uttar Pradesh	102948	112754	118715	125470	133949	124665	109048	117140	120545	39367	-3.2	90989.5
17	Uttarkhand	7332	7651	6441	6134	6100	7686	5590	5842	6498	6596	-1.6	5995.8
18	West Bengal	1281	1253	1033	1248	1267	1272	1638	1001	1134	1175	-0.4	1204.5
19	Others	518	478	492	553	514	680	564	606	937	927	7.4	882.3
	All India	287383	233862	237088	281172	355520	348188	285029	292302	342382	351193	3.2	355219.9

* Provisional. Third Advance Estimates

The table shows that the sugarcane production is observed highest in the states of Andhra Pradesh, Gujarat, Haryana, Maharashtra and Uttar Pradesh. The sugar cane production in Andhra Pradesh varies between 15387 in 2002-03 and increased continuously to 21692 in 2006-07 and since then shows a peak and valley configuration. The production increased with ups and downs in Maharashtra, Tamil Nadu and Uttar Pradesh states

5. STATE-WISE YIELD OF SUGAR CANE

The state-wise yield of sugarcane for chief sugar cane production has been presented in Table 4.

TABLE 4: STATE-WISE PRODUCTION OF SUGARCANE

Sl.NO	State	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-2011	2011-12	LGR	2012-13
1	Andhra Pradesh	66.2	72.1	74.9	76.8	82.2	82.2	78.5	74.1	77.9	78	1.2	81.2
2	Assam	35.2	39.2	37	37.2	39.1	37.7	38.4	39.1	36.2	39.4	0.5	38.8
3	Bihar	42.1	41.4	39.5	42.8	46	35.5	44.3	43.4	51.5	50.5	2.2	49.0
4	Chhattisgarh	25.0	26.1	24.8	25.6	26	25.2	24	23.6	26.3	23.3	-0.6	24.1
5	Gujarat	69.4	71.8	74.1	74	730	72	70.2	80.5	72.4	69	-2.8	117.1
6	Haryana	56.3	58	62	64.4	68.4	63.3	57	72.1	71	71.1	2.3	72.6
7	Jharkhand	34.3	34.0	36.3	35.5	35.5	25	61.2	68.8	69.2	69.3	10.2	73.3
8	Karnataka	84.9	65.8	80.2	83.4	87.9	85.8	83	90.3	93.8	90.0	2.1	94.1
9	Kerala	82.3	83.1	94.3	134.8	88.0	109.0	125.2	95.0	95.5	95.5	1.2	107.0
10	Madhya Pradesh	39.9	43.3	40.9	43.7	43.6	42.3	42.2	40.8	41.0	38.3	-0.5	40.4
11	Maharashtra	74.4	57.9	63.2	77.6	74.9	80.9	79.0	84.9	84.9	80.7	2.9	88.0
12	Orissa	53.0	59.2	55.8	65.8	63.4	55.4	59.8	61.2	68.9	56.5	1.0	63.2
13	Punjab	60.3	53.8	60.1	57.9	60.1	60.8	57.7	61.7	59.6	60.0	0.5	60.7
14	Rajasthan	42.2	53.3	48.5	61.1	57.8	57.1	59.7	57.4	66.9	62.3	3.4	67.2
15	Tamil Nadu	92.4	91.9	100.8	104.7	105.1	107.5	106.2	101.5	108.4	103.0	1.3	109.5
16	Uttar Pradesh	56.3	55.5	60.7	58.2	59.6	57.2	52.3	59.3	56.7	56.7	-0.2	56.7
17	Uttarkhand	54.6	59.8	60.2	60.7	50.4	62.0	52.2	60.9	60.9	61.1	0.6	60.1
18	West Bengal	65.7	74.1	66.2	83.2	76.3	75.3	93.1	72.5	75.6	73.1	1.1	80.1
19	Others	39.0	40.8	36.2	38.7	38.9	45.3	40.0	35.5	52.1	50.4	2.7	48.0
	All India	63.6	59.4	64.8	66.9	69.0	68.9	64.6	70.0	70.1	68.9	1.3	71.3

* Provisional. Third Advance Estimates

The sugar cane yield shows that the sugar cane yield shows highest in the state of Tamil Nadu, Kerala, Maharashtra, Gujarat and West Bengal. The yield is very low in the states of Chattisgarh, Assam and Madhya Pradesh.

6. STATE-WISE UTILISATION PERCENTAGE OF SUGAR CANE

The state-wise area under sugarcane for chief sugar cane production has been presented in Table 5.

TABLE 5: STATE - UTILISATION PERCENTAGE OF SUGARCANE PRODUCTION OF SUGAR IN IMPORTANT STATES

Sl.No.	State	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-2011	LGR	2012-13
1	Andhra Pradesh	57.05	58.56	69.68	79.68	65.18	38.97	47.38	68.95	-1.7	56.4
2	Bihar	68.41	64.45	102.70	87.37	89.13	47.78	54.13	32.44	-9.1	43.3
3	Gujarat	76.98	50.82	73.98	85.67	75.97	60.89	91.09	89.82	4.3	88.6
4	Haryana	59.91	48.86	51.19	69.89	68.45	49.28	49.63	71.93	1.8	63.0
5	Karnataka	68.32	72.03	98.28	87.89	109.80	68.87	78.76	85.14	1.4	88.2
6	Madhya Pradesh	48.93	34.08	39.55	68.82	57.30	21.02	33.65	63.74	1.0	47.7
7	Maharashtra	113.28	95.02	114.74	101.67	94.47	65.99	95.68	97.96	-3.5	83.6
8	Orissa	51.86	54.19	41.19	49.06	62.30	50.57	51.23	57.49	1.7	55.8
9	Punjab	60.51	62.28	75.64	84.57	85.97	55.75	57.08	82.33	1.3	74.2
10	Tamil Nadu	52.57	49.12	66.04	66.75	59.90	50.62	48.17	59.30	-0.2	56.0
11	Uttar Pradesh	41.11	43.36	48.46	66.81	59.95	41.71	48.43	53.41	2.2	54.9
12	Uttarkhand	51.93	61.40	73.67	91.93	53.47	43.31	54.33	49.79	-3.9	50.3
	All India										

* Provisional. Third Advance Estimates

The table shows that the utilization percentage of sugarcane production is highest in Maharashtra, followed by Gujarat, Bihar, Karnataka and shows up and down trend.

7. PER CAPITA CONSUMPTION OF SUGAR CANE

The per capita consumption of sugar, gur & khandsari (kg per annum) has been presented in Table 6.

The LGR of population growth is 1.99 but does not show substantial increase in the population growth. The expected increase in population growth in 2011-12 will be 1182.1 and in 2012-13 will be 1197.6. There would not be much variation in increase in the population growth between 2011-12 and 2012-13. Hence immediate immense measures are to be taken for decreasing population growth.

The consumption of sugar, gur & khandsari (kg per annum) is concerned; the consumption of sugar has been continuously increased from 21.13 kg per annum to 1186 in 2010-11. The LGR of yield of consumption of sugar is 5.1 but does not show substantial increase in the consumption of sugar. The expected increase in consumption of sugar in 2011-12 will be 286.4 tonnes and in 2012-13 will be 297.2. There would not be much variation in increase in the yield of sugarcane between 2011-12 and 2012-13. Hence immediate immense measures are to be taken for reducing the consumption of sugar.

Gur & Khandsari increased from 60.74 kg per annum 1962-63 to 117.98 kg per annum in 1997-98. The LGR of yield of sugar cane is 0.24 but does not show substantial increase in the area. The expected increase in gur & khandsari (kg per annum) in 2011-12 will be 84.2 tonnes and in 2012-13 will be 84.4. There would not be much variation in increase in the gur & khandsari (kg per annum) between 2011-12 and 2012-13. Hence immediate immense measures are to be taken for reducing the consumption of gur & khandsari (kg per annum).

The per capita consumption (Kg per annum) of sugar 2.8 in 1961-62 and 19.9 in 2008-09, and Gur & Khandsari decreased 15.2 kg per annum 1961-62 to 3 kg per annum in 2006-07.

The LGR of per capita consumption (Kg per annum) of sugar is 2.26 but does not show substantial increase in the area. The expected increase in per capita consumption (Kg per annum) of sugar in 2011-12 will be 20 tonnes and in 2012-13 will be 20.3. There would not be much variation in increase in the per capita consumption (Kg per annum) of sugar between 2011-12 and 2012-13. Hence immediate immense measures are to be taken for reducing the per capita consumption (Kg per annum) of sugar.

Total per capita consumption of gur & khandsari (kg per annum) varies from 3 in 2006-07 and 15.2 in 1960-61 showing a decreasing trend. The LGR of per capita consumption (Kg per annum) of sugar is -1.61 but does not show substantial increase in the area. The expected increase in per capita consumption (Kg per annum) of sugar in 2011-12 will be 6.4 tonnes and in 2012-13 will be 6.2. There would not be much variation in increase in the per capita consumption (Kg per annum) of sugar between 2011-12 and 2012-13. Hence immediate immense measures are to be taken for reducing the per capita consumption (Kg per annum) of sugar.

Total per capita consumption of sugar, gur & khandsari (kg per annum) varies from 29.2 in 2008-09 and 16.6 in 1967-68. The LGR of per capita consumption of sugar, gur & khandsari (kg per annum) is 0.60 but does not show substantial increase in the area. The expected increase in per capita consumption sugar, gur & khandsari (kg per annum) in 2011-12 will be 25.2 tonnes and in 2012-13 will be 25.4. There would not be much variation in increase in the per capita consumption sugar, gur & khandsari (kg per annum) between 2011-12 and 2012-13. Hence immediate immense measures are to be taken for reducing the per capita consumption of sugar, gur & khandsari (kg per annum).

TABLE 6: PER CAPITAL CONSUMPTION OF SUGAR, GUR & KHANDSARI

Year	Population in million (as on 1st March)	Consumption Lakh tonnes		Per capita consumption (Kg per annum)		Total per capita consumption of sugar, gur & khandsari (kg per annum)
		Sugar	Gur & Khandsari*	Sugar	Gur & Khandsari*	
1960-61	439	21.13	66.87	4.8	15.2	20.0
1961-62	448	25.88	64.32	2.8	14.4	20.2
1962-63	458	24.86	60.74	5.4	13.3	18.7
1963-64	468	23.07	66.67	4.9	14.2	19.1
1964-65	478	24.69	72.05	5.2	15.1	20.3
1965-66	489	28.10	69.11	5.7	14.1	19.8
1966-67	500	26.01	61.25	5.2	12.2	17.4
1967-68	511	22.15	63.05	4.3	12.3	16.6
1968-69	523	26.05	73.46	5.0	14.0	19.0
1969-70	534	32.64	74.01	6.1	13.9	20.0
1970-71	546	40.25	74.37	7.4	13.6	21.0
1971-72	558	37.95	69.98	6.8	12.5	19.3
1972-73	570	35.14	70.30	6.2	12.3	18.5
1973-74	581	35.22	83.36	6.1	14.3	20.4
1974-75	593	34.75	80.63	5.9	13.6	19.5
1975-76	609	36.89	83.67	6.1	13.7	19.8
1976-77	621	37.57	88.41	6.0	14.2	20.2
1977-78	633	44.82	90.88	7.1	14.4	21.5
1978-79	646	62.14	75.96	9.6	11.8	21.4
1979-80	669	78.8@	75.48	7.8	11.3	19.1
1980-81	684	4.80@	85.22	7.3	12.5	19.8
1981-82	700	57.11	80.40	8.2	11.5	19.7
1982-83	710	64.71	86.65	91.0	12.2	21.3
1983-84	723	75.70	95.41	10.5	13.2	23.7
1984-85	737	78.90@	75.48	7.8	11.3	19.1
1985-86	751	83.53@	82.48	11.1	11.0	22.1
1986-87	765	87.75@	83.00	12.0	10.7	22.7
1987-88	779	93.33	83.00	12.0	10.7	22.7
1988-89	804	99.19	93.93	12.3	11.7	24.0
1989-90	821	102.83@	85.73	12.5	10.4	21.9
1990-91	846	107.15	90.71	12.7	10.7	23.4
1991-92	861	112.25	93.95	13.0	10.9	23.9
1992-93	878	120.05	98.62	13.7	11.2	24.9
1993-94	894	111.29@	85.73	12.5	10.4	22.9
1994-95	911	119.74	105.26	12.4	11.8	24.2
1995-96	929	131.72	74.45	14.2	8.0	22.2
1996-97	947	136.75	115.61	14.4	12.2	26.6
1997-98	966	139.78	117.98	14.5	12.2	26.7
1998-99	985	141.35	99.05	14.4	10.1	24.5
1999-00	1005	155.08	87.19	15.4	8.7	24.1
2000-01	1029	1652.00	86.09	15.7	8.4	24.1
2001-02	1043	167.81	83.11	16.1	8.0	24.1
2002-03	1060	183.84	56.94	17.3	5.4	22.7
2003-04	1077	172.85	71.46	16.0	6.6	22.6
2004-05	1093	185.00	81.75	16.9	7.5	24.4
2005-06	1106	189.45	57.39	17.1	5.2	22.3
2006-07	1122	201.60	33.68	18.0	3.0	21.0
2007-08	1138	220.00	50.93	19.3	4.5	23.8
2008-09	1154	230.00	107.92	19.9	9.3	29.2
2009-10	1170	210.00	73.12	17.9	6.2	24.1
2010-11(P)	1186	207.36	59.94	17.5	5.1	22.6
LGR	1.99	5.01	0.24	2.36	-1.61	0.60
2011-12	1182.1	286.4	84.2	20.0	6.4	25.2
2012-13	1197.6	292.7	84.4	20.3	6.2	25.4
@	Consumption of Imported sugar			* The entire productions is taken to be consumed internally		

CONCLUSION

The area under sugar cane varies from 1.176 hectares in 1930-31 to 5,151 in 2007-08, the number of factories ranges between 29 in 1930-31 to 527 in 2010-11, the yield of cane per hectare varies from 39 tonnes in 1930-31 to 71.1 tonnes in 1998-99, the number of factories ranges between 29 in 1930-31 to 527 in 2010-11 and shows an ever increasing trend. The average duration days ranges between 87 in 2008-09 and 181 in 1995-96. But it shows up and down trend in the study period. The capacity ranges between 644 in 1935-36 to 527 in 2010-11 and shows an ever increasing trend. Cane Crushed varies from 1,339 tonnes in 1930-31 to 279,295 in 2006-07 and shows lot of variations in the crushed cane. The total Sugar production varies from 120 in 1930-31 to 98,338 in 1993-94 and shows lot of variation in the sugar production. The Molasses Production varies from 336 in 1931-32 to 131,111 in 2006-07. Recovery Performance varies from 8.96 in 1930-31 to 10.55 in 2007-08 and shows variations. The molasses in percentage to cane varies from 3.33 in 1935-40 to 4.69 in 2006-07 with lot of variations. The consumption of sugar, gur & khandsari (kg per annum) is concerned, the consumption of sugar has been continuously increased from 21.13 kg per annum to 1186 in 2010-11. Gur & Khandsari increased from 60.74 kg per annum 1962-63 to 117.98 kg per annum in 1997-98. The per capita consumption (Kg per annum) of sugar 2.8 in 1961-62 and 19.9 in 2008-09 and Gur & Khandsari decreased 15.2 kg per annum 1961-62 to 3 kg per annum in 2006-07. Total per capita consumption of sugar, gur & khandsari (kg per annum) varies from 16.6 in 1967-68 and 29.2 in 2008-09.

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